NERRS Science Collaborative Progress Report for the Period 03/01/13 through 08/31/13

Project Title: *Freshwater Inflow: Determining flow regimes in the face of land use change, climate change, and other unknowns*

Principal Investigator(s): Ed Buskey

Project start date: 11/15/2011

Report compiled by: Sally Morehead Palmer

Contributing team members and their role in the project:

Sally Morehead Palmer: Project coordinator & Fiscal agent
Dr. Ed Buskey: Applied Science Investigator and Principal Investigator
Dr. Tarla Rai Peterson: Collaboration Lead
Dr. Ken Dunton and Dr. Norman Johns: Intended User Representative
Dr. Kiersten Madden and Dr. George Ward: Applied Science Investigator

A. Progress overview:

The overall goal of the project is to improve the quality of environmental flow recommendations for the Guadalupe/San Antonio Bay and Basin by collaborating with local stakeholders and scientists to overcome research barriers and provide additional information and data for the Senate Bill 3 adaptive management process. During this performance period the project team hosted several project team conference calls, one intended user meeting, and conducted media outreach, data collection, and data analysis.

B. Working with Intended Users:

Presentations - Intended users were integrated in the project by participation in several stakeholder meetings.

- On 4/16/13 the project team hosted a stakeholder meeting in Port Aransas, Texas at the Estuarine Research Center. The purpose of this meeting was to present research conducted to date and to continue the mediated modeling component.
- On 06/27/13, Dr. Kiersten Madden gave a project update to the Guadalupe San Antonio Bay and Basin Area Stakeholder Committee. On 8/5/13, she met again with a subset of this group to discuss future funding opportunities for freshwater inflow research within the study area.

Unanticipated challenges or opportunities

- Freshwater inflow is a challenging problem and our NSC project addresses several components of the issue. It has been a challenge helping stakeholders understand how the seemingly different components of the project work together in the short amount of time available for meetings (without meeting

burnout). At the next stakeholder meeting we will add a facilitated discussion of how the project components (i.e., land use / climate modeling, current meters, blue crab research, and mediated model) affect decision-making related to freshwater inflows. The purpose of this discussion will be to develop systems thinking for decision-making for freshwater inflow.

Collaboration

- The mediated model (using NetLogo software) is continuing to be developed with suggested revisions from stakeholders.
- Keypad polling is a mechanism that is being used to generate feedback from participants for the mediated modeling, as well as the other three components of the project.
- Abbie Sherwin, TIDES Intern, is currently developing a video that will explain the environmental research being conducted and why it is important.

C. Progress on project objectives for this reporting period:
One large stakeholder meeting was held on 04/16/13 to involve stakeholders in the research conducted to date and continue the mediated model development. Presentations were provided to intended users to help them familiarize themselves with the project and upcoming information needs and data to be gathered. During the next six months, the project team is scheduled to have another workshop on 9/12/13 with intended users to continue mediated model development and update stakeholders on project progress. Stakeholder feedback that is needed will be gathered at this time.

Data collection is on-track and on-going. Leveraging has occurred to conduct additional research projects (i.e, Environmental Cooperative Science Center research on Rangia clams, and juvenile blue crab work). This has allowed the project team to move beyond the original scope of the proposed project and meet additional stakeholder needs. Three research projects have begun and/or are close to completion: (1) a Rangia clam abundance survey has been conducted within the project area , (2) a student thesis project has examined blue crab larvae responses to different salinity regimes, and (3) current meters have been deployed throughout a large portion of the project area (Figure 1).

The current meter research was developed in response to a need for data that better characterizes circulation patterns between adjacent bay systems. Researchers are working with state and non-governmental partners (i.e., Texas Water Development Board and San Antonio Bay Foundation) to provide technical assistance for deployment of current meters and expand the current meter study to also include San Antonio Bay. The US Coast Guard also expressed interest in receiving current meter and circulation

information to assist with disaster response planning. Data collection and instrumentation deployment will continue during the next six months.

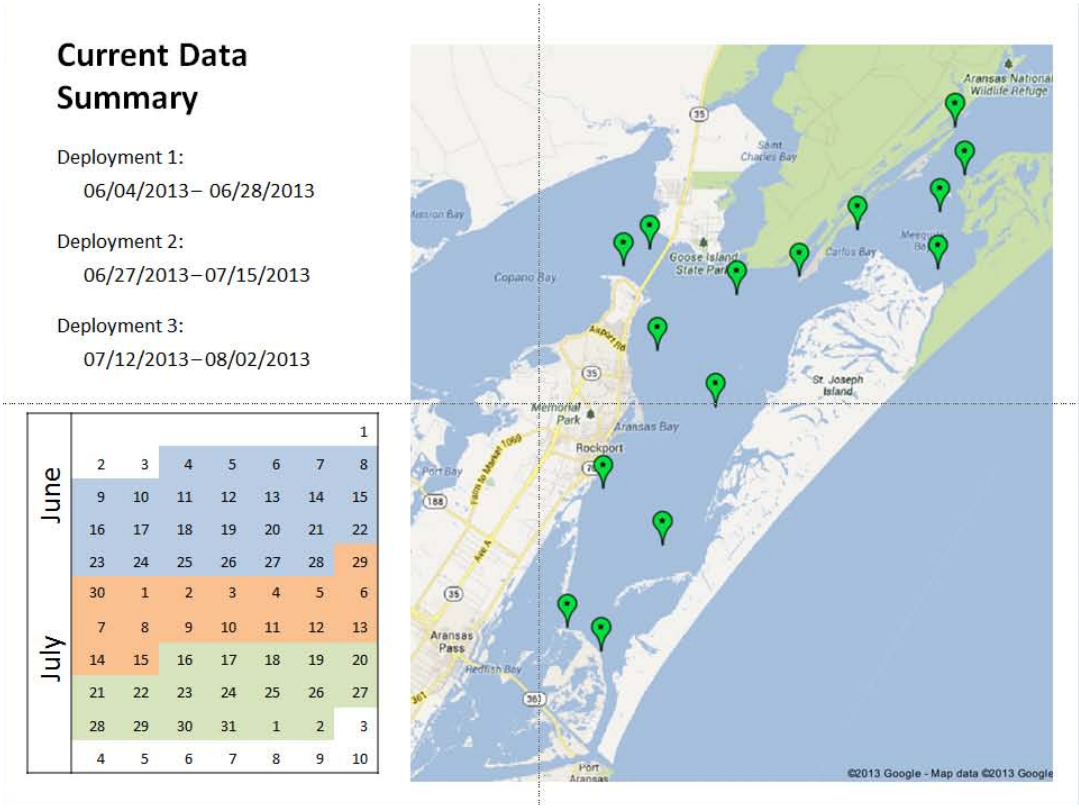

Figure 1. Current meter deployment to collect circulation data.

D. Benefit to NERRS and NOAA:

Freshwater inflow is the biggest resource management issue in Texas, as well as many other states. This project will provide much needed information on freshwater inflow management. Results from this project will be highlighted in a "Teachers On The Estuary" training in summer of 2014. The mediated modeling component is of interest to the NERRS. There has been discussion amongst TAMU and Wells NERR about future collaborations.

<u>Meetings Held or Participated in</u>:

4/25-4/26/13	Presentation at the Texas Bays and Estuaries Meeting (Kimberly Bittler)
4/25-4/26/13	Presentation at the Texas Bays and Estuaries Meeting (Zack Darnell)
06/27/13	Presented update on project to Bay and Basin Area Stakeholder Committee (Kiersten Madden)
6/7/13	Presentation at the Conference of Communication and the Environment Uppsala, Sweden Presentation Title: Water Policy by Design on the Texas Coast. *There is a full paper that will be published*

	in the proceedings for the meeting, but I do not have the citation for that as yet. It should be out later this year. (Chara J Ragland)
6/21/13	Presentation on drought and water conservation to The University of Texas Marine Science Institute. The NERRS Science Collaborative project was highlighted. (Sally Palmer)
07/02/13	Presentation to Marine Conservation undergraduate course at the University of Texas Marine Science Institute – presentation focus on the benefits of collaboration in science and used this project as an example (Kiersten Madden and Sally Palmer)